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REMARKS

Claims 1-16 are pending in the present application. Claim 13 has been canceled, Claim 16 has been amended, leaving Claims 1-12 and 14-16 for consideration upon entry of the present Amendment. Claim 16 has been amended to merely correct a typographical error contained therein. Accordingly, Applicants respectfully request that the Examiner enter this Amendment, as it places the case in a better condition for allowance.

No new matter has been introduced by this amendment. Reconsideration and allowance of the claims is respectfully requested in view of the above amendment and the following remarks.

Drawings

In reviewing the specification, Applicants noticed that reference numeral 20, i.e., device 20, was mentioned in the specification, but the reference numeral did not appear in the drawings. Applicants have amended Figure 2 to add reference numeral 20. Antecedent basis for this amendment can be found at least in the specification at page 3, paragraph [0014].

Claim Rejections Under 35 U.S.C. § 112, First Paragraph

Claim 13 stands rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in relevant art that the inventors, at the time the applications was filed, had possession of the claimed invention.

This rejection is moot, as Applicants have cancelled Claim 13.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1, 2, 4, 9, 10, 12, 15, and 16 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 4,907,341 to Chapel, Jr. et al. Applicants respectfully traverse this rejection.

Independent Claim 1 is directed to a method for manufacturing a planar temperature sensor having an inputted resistance value, the method comprising: disposing a thick amount of a material having a thermal coefficient of resistance of greater than about 800 parts per million

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and a natural resistance of above about 5 micro-ohm-centimeters on a substrate; and measuring a resistance value of the material.

Chapel, Jr. et al. teach a process of manufacturing and adjusting a compound resistor. "The compound resistor is formed of a resistive material forming a predominant portion of the resistance and having a small negative temperature coefficient of resistance coupled with an adjustment material having an extremely low coefficient of resistance and a very high positive temperature coefficient of resistance." (Abstract).

To anticipate a claim, a reference must disclose each and every element of the claim.

Lewmar Marine v. Variant Inc., 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

In making the rejection, the Examiner alleged that,

As applied to claim 1, the '341 teaches a method of manufacturing a compound thin, thick, polymer or bulk material film resistor (Cf. column 7, lines 60-62), comprising:

disposing an amount of material having a TCR of between +500 to +9000 ppm (Cf. Fig. 2, element 42; column 4, lines 59-63) and a resistivity of 0.1 ohm per square (Cf. column 6, lines 29-30) or 7 micro-ohm-cm (for Nickel) on the substrate (Cf. Fig. 2, element 12),

measuring (Cf. column 6, lines 11-14) the resistance value of the compound and laser machining for adjustment which is carried out under the guidance of a computer.

(Paper 5, p. 3).

However, Chapel, Jr. et al. do teach a "method for manufacturing a planar temperature sensor." Rather, Chapel, Jr. et al. teach a process of manufacturing and adjusting a compound resistor. In other words, Applicants' preamble is "necessary to give life, meaning, and vitality" to the claim. Applicant submits that "if the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999). See also *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPAQ 1951 (A preamble reciting "An abrasive article" was deemed essential to point out the invention defined by claims to an article comprising abrasive grains and a hardened binder and the process of making it. The court stated "it is only by that phrase that it can be known that the subject matter defined by the claims is comprises as an abrasive article. Every union of substances is capable *inter alia* of use as abrasive grains and a binder is not an 'abrasive

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article.” Therefore, the preamble served to further define the structure of the article produced.); MPEP 2111.02.

Furthermore, the phrase “a planar temperature sensor” gives meaning to the body of the claim. As such, it should be construed as if in the balance of the claim. In contrast to Applicant’s independent Claim 1, Chapel, Jr. et al. do not teach a method of making “a planar temperature sensor.” Since Chapel, Jr. et al. fail to teach “a planar temperature sensor”, they do not teach each and every element of independent Claim 1. Accordingly, independent Claim 1 is not anticipated. Moreover, as a dependent claim from an allowable independent claim, Claims 2, 4, 9, 10, 12, 15, and 16 are, by definition, also allowable.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 3, 5-8, 11, and 14 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Patent No. 4,907,341 to Chapel, Jr. et al. Applicants respectfully traverse this rejection.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

In addition to not teaching “a planar temperature sensor”, Chapel, Jr. et al. fail to provide the necessary suggestion or motivation to make a “planar temperature sensor.” In other words, absent in Chapel Jr. et al. is any teaching or suggestion that their process of manufacturing and adjusting a compound resistor can be used to make a planar temperature sensor. As such, Applicants’ independent Claim 1 is not obvious. Moreover, as a dependent claim from an allowable independent claim, Claims 3, 5-8, 11, and 14, are by definition also allowable. Nevertheless, Applicants submit that these claims contain additional patentably distinct features.

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In rejecting Claim 14, the Examiner alleged that Chapel, Jr. et al. teach Applicants' invention "except for the ablation or trimming by laser of the resistive material layer by an amount determined in relation to overshoot value of thermal coefficient of resistance of the material." (Paper 5, p. 6).

Furthermore, with regard to this limitation, the Examiner stated:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to ablate or trim by laser the resistive material by an amount determined in relation to overshoot value of thermal coefficient of resistance of the material since it is known in this art that a step of laser trimming can be applied by computer measurement and laser guided trimming (Cf. column 6, lines 11-15) through the absolute value of the temperature coefficient of resistance of the resistive material. (Cf. column 5, lines 21-31).

(Paper 5, p. 6). Applicants respectfully disagree.

Applicants' Claim 14 discloses, *inter alia*, "trimming the material by an amount determined in relation to the resistance overshoot value." Furthermore, Applicants teach that significantly more material is ablated in their disclosed process relative to other devices employed in temperature environments below 200°C. As such, the unit adsorbs significantly more heat. "Because of the heating of the unit 16, the method requires compensation with respect to the degree of desired ablation of material 12 with laser 22." (Specification, paragraph [0016]). The Applicants disclose that compensation for thermal change in the resistance of material is "accomplished by determining a resistance overshoot and adjusting the trimming process according thereto." (Specification, paragraph [0016]).

In contrast, Chapel, Jr. et al. teach that

thin film and bulk metal products tend to be more stable and more precise than thick film or polymer....Thus, it is more likely the inventive method and compound resistor will be used in thin film and bulk metal applications although, as materials for thick films and polymer films are improved, the method may find increasing application in such resistor arrays.

(Col. 7, line 65 to Col. 8, line 5, emphasis added).

In applying Section 103, the U.S. Court of Appeals for the Federal Circuit has consistently held that one must consider both the invention and the prior art "as a whole", not from improper hindsight gained from consideration of the claimed invention. See, *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) and cases cited therein.

According to the *Interconnect* court

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[n]ot only must the claimed invention as a whole be evaluated, but so also must the references as a whole, so that their teachings are applied in the context of their significance to a technician at the time - a technician without our knowledge of the solution.

Chapel, Jr. et al., when viewed as whole as is required, would not lead one skilled in the art to make Applicants' claimed invention. More particularly, Chapel, Jr. et al. at least fail to suggest "determining a resistance overshoot" to solve the problems encountered in the art associated with thick films. Rather, as noted above, Chapel, Jr. et al. teach that the materials used in thick films need to be improved in order for their disclosed method to work. As such, Chapel, Jr. et al. is not teaching "determining a resistance overshoot" to solve the problems associated with thick films. Further, Chapel Jr. et al. teach that the desired nominal resistive value for the resistor may be expressed as a function of the absolute value of the temperature coefficient of resistance. (Col. 5, lines 22-31). The Examiner had relied upon this section of Chapel, Jr. et al. in making this obviousness rejection. Applicants submit that this teaching alone or within the context of Chapel, Jr. et al. as is required would not lead one of ordinary skill in the art to "determining a resistance overshoot". For at least this reason, Claim 14 is not obvious.

With regard to Claim 3, Applicants submit that Claim 3 contains additional patentably distinct features. As correctly noted by the Examiner, Chapel, Jr. et al. fail to teach reading the resistor value with 0.2% of resistance value. However, in making the obviousness rejection the Examiner stated:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to obtain such accuracy since it was known in the art that the measurement is carried out under the guidance of a computer (Cf. column 6, lines 11-13) and this means of measurement will give the accuracy which is recited. (Paper 5, p. 5). Applicants respectfully disagree.

Chapel Jr. et al. teach "depositing the resistive material on to a substrate and then removing the undesired conventional photolithographic processes". (Col. 3, line 64 to Col. 4, line 2). "While it is possible that the TCR may be zero after photolithographic fabrication, it is highly improbable". (Col. 5, lines 41-43). Chapel Jr. et al. further teach that the "resistive material is further brought within 90% of the nominal value by laser machining after the photolithographic removal processes." (Col. 5, lines 15-17). Furthermore, Chapel Jr. et al. teach that this method is referred to as "rough laser machining although the same laser may be used to

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obtain the final precise TCR and resistance values.” (Col. 5, lines 18-20). Absent in these teachings is any suggestion that the measuring is within 0.2% of the total resistance value. Rather, these teachings suggest to one skilled in the art that it is difficult to obtain precise resistance values. In contrast, Applicants method allows for measuring with 0.2% of the total resistance value. Accordingly, Claim 3 would be patentable if independent Claim 1 was not allowed.

With regard to Claims 5-7, and 11, Applicants submit that the claims contain further patentably distinct features. As described above, Chapel Jr. et al. teach a photolithographic process with laser ablation as a later step in that process. Heat-drying as used in a photolithographic process is not analogous with “firing” in Applicants process. In other words, Chapel Jr. et al. is not analogous art. For example, “firing” is a term of art generally used in the ceramic arts to describe heating a “green” substrate to calcify the substrate. Temperatures during a firing process may be greater than 1,000°C. Chapel Jr. et al., as discussed above, teaches that their process may be used with a polymer film. A polymer film is heated, not fired. Absent in Chapel Jr. et al. is the necessary teaching or suggestion to “fire” a planar temperature sensor. Since Chapel Jr. et al. do not teach or suggest firing a “planar temperatures sensor”, the claims are not obvious.

Furthermore, as briefly mentioned above with regard to Claims 5-7 and 11, Applicants traverse the rejection on the grounds that Chapel Jr. et al. are non-analogous art. For the purposes of evaluating obviousness of claimed subject matter, the particular references relied upon must constitute “analogous art”. *In re Clay*, 966 F.2d 656, 659, 23 U.S.P.Q.2d 1058, 1060-61 (Fed. Cir. 1992). The art must be from the same field of endeavor, or be reasonably pertinent to the particular problem with which the inventor is involved. *Id.* Chapel, Jr. et al. is directed to a process of manufacturing and adjusting a compound resistor. In contrast, Applicants teach a method for manufacturing a planar temperature sensor. Chapel, Jr. et al. do not teach or suggest a method of manufacturing a planar temperature sensor, and do not suggest methods of overcoming problems associated with manufacturing a planar temperature sensor. While Chapel, Jr. et al. do teach methods of making a resistor, one skilled in the art of manufacturing a planar temperature sensor would not have turned to Chapel, Jr. et al., as there is no teaching or suggestion to solve the problems of this art. For at least the reason that Claim 1 is directed to a

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method of making a "planar temperature sensor", Claim 1 is not obvious over Chapel, Jr. et al. Moreover, as a dependent claim from an allowable independent claim, Claims 2-12 and 14-16 are, by definition also allowable.

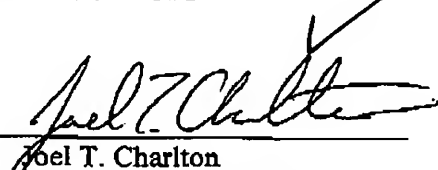
It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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